
Software Metrics A Rigorous Approach Muschy

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Volume 1

Software Metrics

Approaches and Tools

A Metrics Suite for Object Oriented Design

A Practical Guide for Quality Improvement of Software Development

Moneyball (Movie Tie-in Edition) (Movie Tie-in Editions)

Software Engineering and Knowledge Engineering: Theory and Practice

Methods and Metrics

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How Today's Entrepreneurs Use Continuous Innovation to Create Radically Successful Businesses

Techniques and Case Studies

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A Rigorous and Practical Approach

A Rigorous and Practical Approach, Third Edition

A Case Study Approach

Software Metrics and Software Metrology

Software Metrics

Practical Software Testing

A Rigorous Approach

IFIP TC5 WG5.4 3rd International Conference on Reliability, Quality and Safety of Software-Intensive Systems (ENCRESS '97), 29th-30th May 1997, Athens, Greece

Effective Software Testing

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Measures and Methods

Reliability, Quality and Safety of Software-Intensive Systems

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Elements of Software Science

Modeling, Evaluating, and Predicting IT Human Resources Performance

Testing and Quality Assurance for Component-based Software

ARTHUR DIAZ

IGI Global

Explains how Billy Beene, the general manager of the Oakland Athletics, is using a new kind of thinking to build a successful and winning baseball team without spending enormous sums of money.

Volume 1 CRC Press

Most of the software measures currently proposed to the industry bring few real benefits to either software managers or developers. This book looks at the classical metrology concepts from science and engineering, using them as criteria to propose an approach to analyze the design of current software measures and then design new software measures (illustrated with the design of a software measure that has been adopted as an ISO measurement standard). The book includes several case studies analyzing strengths and weaknesses of some of the software measures most often quoted. It is meant for software quality specialists and process improvement analysts and managers.

Software Metrics CRC Press

Object-oriented (OO) metrics are an integral part of object technology -- at the research level and in commercial software development projects. This book offers theoretical and empirical tips and facts for creating an OO complexity metrics (measurement) program, based on a review of existing research from the last several years. KEY TOPICS: Covers moving through object-oriented concepts as they related to managing the project lifecycle; the framework in which metrics exist; structural complexity metrics for traditional systems; OO product metrics; and current industrial applications. MARKET: For software developers, programmers, and managers.

Approaches and Tools Elsevier Publishing Company

The product of many years of practical experience and research in the software measurement business, this technical reference helps you select what metrics to collect, how to convert measurement data to management information, and provides the statistics necessary to perform these conversions. The author explains how to manage software development measurement systems, how to build software measurement tools and standards, and how to construct controlled experiments using standardized measurement tools. There are three fundamental questions that this book seeks to answer. First, exactly how do you get the measurement data? Second, how do you convert the data from the measurement process to information that you can use to manage the software development process? Third, how do you manage all of the data? Millions of dollars are being spent trying to secure software systems. When suitable instrumentation is placed into the systems that we develop, their activity can be monitored in real time. Measurement based automatic detection mechanisms can be designed into systems. This will permit the detection of system misuse and detect incipient reliability problems. By demonstrating how to develop simple experiments for the empirical validation of theoretical research and showing how to convert

measurement data into meaningful and valuable information, this text fosters more precise use of software measurement in the computer science and software engineering literature. Software Engineering Measurement shows you how to convert your measurement data to valuable information that can be used immediately for software process improvement.

A Metrics Suite for Object Oriented Design IGI Global

Enterprise resource planning (ERP) is a class of integrated software that uses software technologies to implement real-time management of business processes in an organization. ERPs normally cut across organizations, making them large and complex. Software researchers have for many years established that complexity affects software quality negatively and must therefore be controlled with novel metrics and models of evaluation that can determine when the software is at acceptable levels of quality and when not. Metrics and Models for Evaluating the Quality and Effectiveness of ERP Software is a critical scholarly publication that examines ERP development, performance, and challenges in business settings to help improve decision making in organizations that have embraced ERPs, improve the efficiency and effectiveness of their activities, and improve their return on investments (ROI). Highlighting a wide range of topics such as data mining, higher education, and security, this book is essential for professionals, software developers, researchers, academicians, and security professionals.

A Practical Guide for Quality Improvement of Software Development Software Metrics A Rigorous and Practical Approach, Third Edition

Go beyond basic testing! Great software testing makes the entire development process more efficient. This book reveals a systemic and effective approach that will help you customize your testing coverage and catch bugs in tricky corner cases. In *Effective Software Testing* you will learn how to: Engineer tests with a much higher chance of finding bugs Read code coverage metrics and use them to improve your test suite Understand when to use unit tests, integration tests, and system tests Use mocks and stubs to simplify your unit testing Think of pre-conditions, post-conditions, invariants, and contracts Implement property-based tests Utilize coding practices like dependency injection and hexagonal architecture that make your software easier to test Write good and maintainable test code *Effective Software Testing* teaches you a systematic approach to software testing that will ensure the quality of your code. It's full of techniques drawn from proven research in software engineering, and each chapter puts a new technique into practice. Follow the real-world use cases and detailed code samples, and you'll soon be engineering tests that find bugs in edge cases and parts of code you'd never think of testing! Along the way, you'll develop an intuition for testing that can save years of learning by trial and error. About the technology *Effective testing* ensures that you'll deliver quality software. For software engineers, testing is a key part of the development process. Mastering specification-based testing, boundary testing, structural testing, and other core strategies is essential to writing good tests and catching bugs before they hit production. About the book *Effective Software Testing* is a hands-on guide to creating bug-free software. Written for developers, it guides you through all the different types of testing, from single units up to entire components. You'll also learn how to engineer code that facilitates testing and how

to write easy-to-maintain test code. Offering a thorough, systematic approach, this book includes annotated source code samples, realistic scenarios, and reasoned explanations. What's inside Design rigorous test suites that actually find bugs When to use unit tests, integration tests, and system tests Pre-and post-conditions, invariants, contracts, and property-based tests Design systems that are test-friendly Test code best practices and test smells About the reader The Java-based examples illustrate concepts you can use for any object-oriented language. About the author Dr. Maurício Aniche is the Tech Academy Lead at Adyen and an Assistant Professor in Software Engineering at the Delft University of Technology. Table of Contents 1 Effective and systematic software testing 2 Specification-based testing 3 Structural testing and code coverage 4 Designing contracts 5 Property-based testing 6 Test doubles and mocks 7 Designing for testability 8 Test-driven development 9 Writing larger tests 10 Test code quality 11 Wrapping up the book *Moneyball (Movie Tie-in Edition) (Movie Tie-in Editions)* Simon and Schuster

"This book discusses the current state of test automation practices, as it includes chapters related to software test automation and its validity and applicability in different domains"--Provided by publisher.

Software Engineering and Knowledge Engineering: Theory and Practice CRC Press

The volume includes a set of selected papers extended and revised from the I2009 Pacific-Asia Conference on Knowledge Engineering and Software Engineering (KESE 2009) was held on December 19~ 20, 2009, Shenzhen, China. Volume 1 is to provide a forum for researchers, educators, engineers, and government officials involved in the general areas of Computer and Software Engineering to disseminate their latest research results and exchange views on the future research directions of these fields. 140 high-quality papers are included in the volume. Each paper has been peer-reviewed by at least 2 program committee members and selected by the volume editor Prof. Yanwen Wu. On behalf of this volume, we would like to express our sincere appreciation to all of authors and referees for their efforts reviewing the papers. Hoping you can find lots of profound research ideas and results on the related fields of Computer and Software Engineering.

Methods and Metrics Springer

Numerous methods exist to model and analyze the different roles, responsibilities, and process levels of information technology (IT) personnel. However, most methods neglect to account for the rigorous application and evaluation of human errors and their associated risks. This book fills that need. Modeling, Evaluating, and Predicting IT Human Resources Performance explains why it is essential to account for the human factor when determining the various risks in the software engineering process. The book presents an IT human resources evaluation approach that is rooted in existing research and describes how to enhance existing approaches through strict use of software measurement and statistical principles and criteria. Discussing IT human factors from a risk assessment point of view, the book identifies, analyzes, and evaluates the basics of IT human performance. It details the IT human factors required to achieve desired levels of human performance prediction. It also provides a rigorous investigation of existing human factors evaluation methods, including IT expertise and Big Five, in combination with powerful statistical methods, such as failure mode and effect analysis (FMEA) and design of experiment (DoE). Supplies an overview of existing methods of human risk evaluation Provides a detailed analysis of IT role-

based human factors using the well-known Big Five method for software engineering Models the human factor as a risk factor in the software engineering process Summarizes emerging trends and future directions In addition to applying well-known human factors methods to software engineering, the book presents three models for analyzing psychological characteristics. It supplies profound analysis of human resources within the various software processes, including development, maintenance, and application under consideration of the Capability Maturity Model Integration (CMMI) process level five.

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In today's modernized environment, a growing number of software companies are changing their traditional engineering approaches in response to the rapid development of computing technologies. As these businesses adopt modern software engineering practices, they face various challenges including the integration of current methodologies and contemporary design models and the refactoring of existing systems using advanced approaches. Applications and Approaches to Object-Oriented Software Design: Emerging Research and Opportunities is a pivotal reference source that provides vital research on the development of modern software practices that impact maintenance, design, and developer productivity. While highlighting topics such as augmented reality, distributed computing, and big data processing, this publication explores the current infrastructure of software systems as well as future advancements. This book is ideally designed for software engineers, IT specialists, data scientists, business professionals, developers, researchers, students, and academicians seeking current research on contemporary software engineering methods.

How Today's Entrepreneurs Use Continuous Innovation to Create Radically Successful Businesses National Academies Press

Winner of the Shingo Publication Award Accelerate your organization to win in the marketplace. How can we apply technology to drive business value? For years, we've been told that the performance of software delivery teams doesn't matter—that it can't provide a competitive advantage to our companies. Through four years of groundbreaking research to include data collected from the State of DevOps reports conducted with Puppet, Dr. Nicole Forsgren, Jez Humble, and Gene Kim set out to find a way to measure software delivery performance—and what drives it—using rigorous statistical methods. This book presents both the findings and the science behind that research, making the information accessible for readers to apply in their own organizations. Readers will discover how to measure the performance of their teams, and what capabilities they should invest in to drive higher performance. This book is ideal for management at every level.

Techniques and Case Studies IGI Global

Software Metrics A Rigorous and Practical Approach, Third Edition CRC Press

Emerging Research and Opportunities CRC Press

It is, indeed, widely acceptable today that nowhere is it more important to focus on the improvement of software quality than in the case of systems with requirements in the areas of safety and reliability - especially for distributed, real-time and embedded systems. Thus, much research work is under progress in these fields, since software process improvement impinges directly on achieved levels of quality, and many application experiments aim to show quantitative results demonstrating the efficacy of particular approaches. Requirements for safety and reliability -

like other so-called non-functional requirements for computer-based systems - are often stated in imprecise and ambiguous terms, or not at all. Specifications focus on functional and technical aspects, with issues like safety covered only implicitly, or not addressed directly because they are felt to be obvious; unfortunately what is obvious to an end user or system user is progressively less so to others, to the extent that a software developer may not even be aware that safety is an issue. Therefore, there is a growing evidence for encouraging greater understanding of safety and reliability requirements issues, right across the spectrum from end user to software developer; not just in traditional safety-critical areas (e.g. nuclear, aerospace) but also acknowledging the need for such things as heart pacemakers and other medical and robotic systems to be highly dependable.

A Rigorous and Practical Approach CRC Press

"This technological manual explores how software engineering principles can be used in tandem with software development tools to produce economical and reliable software that is faster and more accurate. Tools and techniques provided include the Unified Process for GIS application development, service-based approaches to business and information technology alignment, and an integrated model of application and software security. Current methods and future possibilities for software design are covered."

A Rigorous and Practical Approach, Third Edition W. W. Norton & Company

This book identifies challenges and opportunities in the development and implementation of software that contain significant statistical content. While emphasizing the relevance of using rigorous statistical and probabilistic techniques in software engineering contexts, it presents opportunities for further research in the statistical sciences and their applications to software engineering. It is intended to motivate and attract new researchers from statistics and the mathematical sciences to attack relevant and pressing problems in the software engineering setting. It describes the "big picture," as this approach provides the context in which statistical methods must be developed. The book's survey nature is directed at the mathematical sciences audience, but software engineers should also find the statistical emphasis refreshing and stimulating. It is hoped that the book will have the effect of seeding the field of statistical software engineering by its indication of opportunities where statistical thinking can help to increase understanding, productivity, and quality of software and software production.

A Case Study Approach IGI Global

Software engineering is of major importance to all enterprises; however, the key areas of software quality and software process improvement standards and models are currently geared toward large organizations, where most software organizations are small and medium enterprises. Software Process Improvement for Small and Medium Enterprises: Techniques and Case Studies offers practical and useful guidelines, models, and techniques for improving software processes and products for small and medium enterprises, utilizing the authoritative, demonstrative tools of case studies and lessons learned to provide academics, scholars, and practitioners with an invaluable research source.

Software Metrics and Software Metrology Springer Science & Business Media

This book is a broad discussion covering the entire software development lifecycle. It uses a comprehensive case study to address each topic and features the following: A description of the

development, by the fictional company Homeowner, of the DigitalHome (DH) System, a system with "smart" devices for controlling home lighting, temperature, humidity, small appliance power, and security A set of scenarios that provide a realistic framework for use of the DH System material Just-in-time training: each chapter includes mini tutorials introducing various software engineering topics that are discussed in that chapter and used in the case study A set of case study exercises that provide an opportunity to engage students in software development practice, either individually or in a team environment. Offering a new approach to learning about software engineering theory and practice, the text is specifically designed to: Support teaching software engineering, using a comprehensive case study covering the complete software development lifecycle Offer opportunities for students to actively learn about and engage in software engineering practice Provide a realistic environment to study a wide array of software engineering topics including agile development Software Engineering Practice: A Case Study Approach supports a student-centered, "active" learning style of teaching. The DH case study exercises provide a variety of opportunities for students to engage in realistic activities related to the theory and practice of software engineering. The text uses a fictitious team of software engineers to portray the nature of software engineering and to depict what actual engineers do when practicing software engineering. All the DH case study exercises can be used as team or group exercises in collaborative learning. Many of the exercises have specific goals related to team building and teaming skills. The text also can be used to support the professional development or certification of practicing software engineers. The case study exercises can be integrated with presentations in a workshop or short course for professionals.

Software Metrics Springer

TSPi overview; The logic of the team software process; The TSPi process; The team roles; Using the TSPi; Teamwork.

Practical Software Testing Artech House

This book focuses on a specialized branch of the vast domain of software engineering: component-based software engineering (CBSE). Component-Based Software Engineering: Methods and Metrics enhances the basic understanding of components by defining categories, characteristics, repository, interaction, complexity, and composition. It divides the research domain of CBSE into three major sub-domains: (1) reusability issues, (2) interaction and integration issues, and (3) testing and reliability issues. This book covers the state-of-the-art literature survey of at least 20 years in the domain of reusability, interaction and integration complexities, and testing and reliability issues of component-based software engineering. The aim of this book is not only to review and analyze the previous works conducted by eminent researchers, academicians, and organizations in the context of CBSE, but also suggests innovative, efficient, and better solutions. A rigorous and critical survey of traditional and advanced paradigms of software engineering is provided in the book. Features: In-interactions and Out-Interactions both are covered to assess the complexity. In the context of CBSE both white-box and black-box testing methods and their metrics are described. This work covers reliability estimation using reusability which is an innovative method. Case studies and real-life software examples are used to explore the problems and their solutions. Students, research scholars, software developers, and software designers or individuals interested in software engineering, especially in component-based software engineering, can refer to this book to

understand the concepts from scratch. These measures and metrics can be used to estimate the software before the actual coding commences.

A Rigorous Approach CRC Press

Summary Software Development Metrics is a handbook for anyone who needs to track and guide software development and delivery at the team level, such as project managers and team leads. New development practices, including "agile" methodologies like Scrum, have redefined which measurements are most meaningful and under what conditions you can benefit from them. This practical book identifies key characteristics of organizational structure, process models, and development methods so that you can select the appropriate metrics for your team. It describes the uses, mechanics, and common abuses of a number of metrics that are useful for steering and for monitoring process improvement. The insights and techniques in this book are based entirely on field experience. Purchase of the print book includes a free eBook in PDF, Kindle, and ePub formats from Manning Publications. About the Book When driving a car, you are less likely to speed, run out

of gas, or suffer engine failure because of the measurements the car reports to you about its condition. Development teams, too, are less likely to fail if they are measuring the parameters that matter to the success of their projects. This book shows you how. Software Development Metrics teaches you how to gather, analyze, and effectively use the metrics that define your organizational structure, process models, and development methods. The insights and examples in this book are based entirely on field experience. You'll learn practical techniques like building tools to track key metrics and developing data-based early warning systems. Along the way, you'll learn which metrics align with different development practices, including traditional and adaptive methods. No formal experience with developing or applying metrics is assumed. What's Inside Identify the most valuable metrics for your team and process Differentiate "improvement" from "change" Learn to interpret and apply the data you gather Common pitfalls and anti-patterns About the Author Dave Nicolette is an organizational transformation consultant, team coach, and trainer. Dave is active in the agile and lean software communities. Table of Contents Making metrics useful Metrics for steering Metrics for improvement Putting the metrics to work Planning predictability Reporting outward and upward